CLAIMS:

1. An imaging system comprising:

one or more distributed radiation sources substantially surrounding a desired portion of an imaging volume and configured to emanate a radiation beam from a plurality of individual source positions around the imaging volume; and

one or more detectors configured to receive the radiation beam transmitted through the desired portion of the volume,

wherein at least one of the one or more distributed radiation sources and the one or more detectors are displaceable to allow an unimpeded path for the radiation beam to illuminate the desired portion of the imaging volume and for the detector to receive the radiation beam.

2. The system of claim 1, wherein the one or more detectors are configured to move transversely to allow the radiation beam to illuminate the desired portion of the imaging volume by opening at least one individual aperture for the one or more distributed radiation sources to emanate the radiation beam.

3. The system of claim 1, wherein one or more sections of the one or more detectors are configured to move transversely to allow the radiation beam to illuminate the desired portion of the imaging volume by opening at least one individual aperture for the one or more distributed radiation sources to emanate the radiation beam.

4. The system of claim 1, wherein the one or more detectors are configured to nutate to allow the radiation beam to illuminate the desired portion of the imaging volume by opening at least one individual aperture for the one or more distibuted radiation sources to emanate the radiation beam.

5. The system of claim 1, wherein one or more sections of the one or more detectors are configured to nutate to allow the radiation beam to illuminate the

desired portion of the imaging volume by opening at least one individual aperture for the one or more distributed radiation sources to emanate the radiation beam.

6. The system of claim 1, wherein the one or more detectors are configured to move transversely to intercept the radiation beam by covering at least a portion of the aperture from one or more individual source positions located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

7. The system of claim 1, wherein the one or more detectors are configured to nutate to intercept the radiation beam by covering at least a portion of the aperture of one or more individual source positions located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

8. The system of claim 1, wherein one or more sections of the one or more detectors are configured to move transversely to intercept the radiation beam by covering at least a portion of the aperture of one or more individual source positions located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

9. The system of claim 1, wherein at least one section of the one or more detectors are configured to nutate to intercept the radiation beam by covering at least partially the aperture of at least one different individual source position located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

10. An imaging system comprising:

one or more distributed radiation sources substantially surrounding a desired portion of an imaging volume and configured to emanate a radiation beam from a plurality of individual source positions around the imaging volume; and

one or more detectors configured to move transversely for at least one of:

allowing the radiation beam to illuminate the desired portion of the imaging volume by opening at least one individual aperture for the one or more radiation sources to emanate the radiation beam; and

intercepting the radiation beam by covering at least a portion of the aperature required by one or more individual source positions located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

11. An imaging system comprising:

one or more distributed radiation sources substantially surrounding a desired portion of an imaging volume and configured to emanate a radiation beam from a plurality of individual source positions around the imaging volume; and

one or more sections of one or more detectors configured to move transversely for at least one of:

allowing the radiation beam to illuminate the desired portion of the imaging volume by opening at least one individual aperture for the one or more distributed radiation sources to emanate the radiation beam; and

intercepting the radiation beam by covering at least a portion of the aperature required by one or more individual source positions located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

12. An imaging system comprising:

one or more distributed radiation sources substantially surrounding a desired portion of an imaging volume and configured to emanate a radiation beam from a plurality of individual source positions around the imaging volume; and

one or more detectors configured to at least one of nutate or move transversely for at least one of:

allowing the radiation beam to illuminate the desired portion of the imaging volume by opening at least one individual aperture for the one or more distributed radiation sources to emanate the radiation beam; and

intercepting the radiation beam by covering at least a portion of the aperture of at least one different individual source position located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

13. An imaging system comprising:

one or more distributed radiation sources substantially surrounding a desired portion of an imaging volume and configured to emanate a radiation beam from a plurality of individual source positions around the imaging volume; and

one or more sections of one or more detectors configured to at least one of nutate or move transversely for at least one of:

allowing the radiation beam to illuminate the desired portion of the imaging volume by opening at least one individual aperture for the one or more distributed radiation sources to emanate the radiation beam; and

intercepting the radiation beam by covering at least a portion of the aperture of at least one different individual source position located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

14. A stationary CT system comprising:

a plurality of X-ray sources arranged relative to a volume to be imaged, each X-ray source configured to emanate an X-ray beam; and

a plurality of detectors arranged generally across from respective X-ray sources, wherein at least one of an X-ray source from the plurality of X-ray sources and a detector from the plurality of detectors are configured to be displaced to allow an unimpeded path for the X-ray beam to illuminate a desired portion of an imaging volume and for the detector to receive a transmitted X-ray beam.

15. The system of claim 14, wherein the detector is configured to at least one of nutate or move transversely to open an aperture for an adjacent X-ray source to emanate the X-ray beam.

16. The system of claim 14, wherein a section of the detector is configured to at least one of nutate or move transversely to open an aperture for an adjacent X-ray source to emanate the X-ray beam.

17. The system of claim 14, wherein the detector at least one of nutates or moves traversely to cover at least a portion of an aperture for one or more adjacent X-ray sources located generally opposite to an X-ray source emanating the X-ray beam.

18. The system of claim 14, wherein a section of the detector is configured to at least one of nutate or move transversely to cover at least a portion of an aperature for one or more adjacent X-ray sources located generally opposite to an X-ray source emanating the X-ray beam.

19. An imaging system for scanning a volume to be imaged, the system comprising:

one or more distributed radiation sources substantially surrounding a desired portion of an imaging volume and configured to emanate a radiation beam from a plurality of individual positions around the imaging volume;

a control circuit operably coupled to the source;

one or more detectors to receive a transmitted radiation;

a motor controller configured to displace at least one of the source, and the detector;

a processing circuit operably coupled to the detector configured to receive the plurality of projection images and to form one or more reconstructed slices representative of the volume being imaged; and

an operator workstation operably coupled to the processing circuit configured to display the one or more reconstructed slices,

wherein at least one of the one or more distributed radiation sources and the one or more detectors are displaceable to allow an unimpeded path for generation of the radiation beam and the reception of the transmitted radiation beam.

20. The system of claim 19 further comprising:

one or more detectors configured to at least one of nutate or move transversely for at least one of:

allowing the radiation beam to illuminate the desired portion of the imaging volume by opening at least one individual aperture for the one or more distributed radiation sources to emanate the radiation beam; and

intercepting the radiation beam by covering at least a portion of the aperture of at least one different individual source positions located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

21. The system of claim 19 further comprising:

one or more sections of one or more detectors configured to one of nutate or move transversely for at least one of:

allowing the radiation beam to illuminate the desired portion of the imaging volume by opening at least one individual aperture for the one or more distributed radiation sources to emanate the radiation beam; and

intercepting the radiation beam by covering at least a portion of the aperture of at least one different individual source positions located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

22. An imaging system comprising:

one or more distributed radiation sources substantially surrounding a desired portion of an imaging volume and configured to emanate a radiation beam from a plurality of individual source positions around the imaging volume; and

one or more sections of one or more detectors configured to one of nutate or move transversely for at least one of:

allowing the radiation beam to illuminate the desired portion of the imaging volume by opening at least one individual aperture for the one or more distributed radiation sources to emanate the radiation beam; and

intercepting the radiation beam by covering at least a portion of the aperture of at least one different individual source positions located generally opposite to the one or more distributed radiation sources emanating the radiation beam.

23. An imaging system comprising:

one or more distributed radiation sources substantially surrounding a desired portion of an imaging volume and configured to emanate a radiation beam from a plurality of individual source positions around the imaging volume; and

one or more detectors configured to receive a transmitted radiation beam,

wherein at least one of the radiation source is displaceable to allow illumination of the desired portion of the imaging volume and for the detector to receive the transmitted radiation beam.

24. An imaging system comprising:

one or more distributed radiation sources substantially surrounding a desired portion of an imaging volume and configured to emanate a radiation beam from a plurality of individual source positions around the imaging volume; and

one or more detectors configured to receive a transmitted radiation beam,

wherein at least one of the radiation source is nutated to allow illumination of the desired portion of the imaging volume and for the detector to receive the transmitted radiation beam.

25. A method of scanning a volume to be imaged, the method comprising:

triggering a distributed radiation source for emanating a radiation beam;

displacing one or more detectors positioned generally adjacent to the distributed radiation source to allow an unimpeded path for the radiation beam to illuminate an imaging volume; and

displacing one or more detectors positioned generally opposite to the distributed radiation source to intercept a transmitted radiation beam.

26. The method of claim 25 further comprising displacing a section of one or more detectors for allowing an unimpeded path for the radiation beam to illuminate the imaging volume.

27. The method of claim 25 further comprising displacing a section of one or more detectors for intercepting the transmitted radiation beam.

28. A method of scanning a volume to be imaged, the method comprising:

triggering a distributed radiation source for emanating a radiation beam;

nutating at least one detector one side of which is positioned generally adjacent to the distributed radiation source for allowing an unimpeded path for the radiation beam to illuminate an imaging volume; and

nutating at least one detector the other side of which is positioned generally opposite to the distributed radiation source to intercept a transmitted radiation beam .

29. A method of scanning a volume to be imaged, the method comprising:

triggering a distributed radiation source for emanating a radiation beam; and

nutating a detector, a part of which is positioned generally opposite to the distributed radiation source to intercept a transmitted radiation.

30. A method of scanning a volume to be imaged, the method comprising:

triggering a distributed radiation source for emanating a radiation beam;

nutating a detector, a part of which is positioned adjacent to the distributed radiation source emanating the radiation beam to allow an unimpeded path for the radiation beam.

31. A method of scanning a volume to be imaged, the method comprising:

triggering a distributed radiation source for emanating a radiation beam; and

receiving a transmitted radiation beam via a detector,

wherein the distributed radiation source is displaceable to allow illumination of a desired portion of an imaging volume and for the detector to receive the transmitted radiation beam.

32. A method of scanning a volume to be imaged, the method comprising:

triggering a distributed radiation source for emanating a radiation beam; and

receiving a transmitted radiation beam via a detector,

wherein the distributed radiation source is nutated to allow illumination of a desired portion of an imaging volume and for the detector to receive the transmitted radiation beam.